

Features

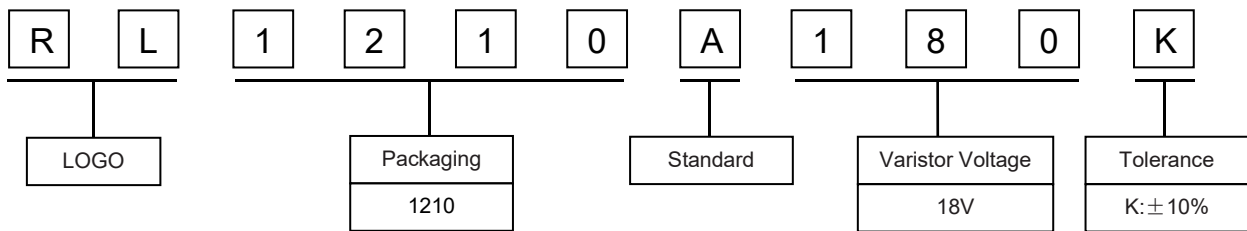
- EIA size:1210
- Variable capacitance
- MSL level 1
- Operating voltage: 3.3Vdc ~455Vdc
- High surge suppress capability
- Bidirectional and symmetrical V/I characteristics
- Multilayer ceramic construction technology
- RoHS & Halogen Free (HF) compliant
- Operating temperature range: -55°C ~ +125°C
- Storage temperature range: 5°C ~ +40°C



Applications

- Used to Help Achieve Electromagnetic Compliance of End Products
- Provides On-Board Transient Voltage Protection for ICs, CMOS and MOSFET
- Suppression of Inductive Switching or Other Transient Events Such as EFT and Surge Voltage at the Circuit Board.
- Protection of Components and Circuits Sensitive to ESD Transients Occurring on Power supplies, Control and Signal Lines.

Part Number Code



Electrical Characteristics

Type Number	Varistor Voltage	Max. Allowable Voltage		Max. Energy (10/1000μs)	Max. Clamping Voltage (8/20μs)		Withstanding Surge Current (8/20μs)
	V _{1mA} (V)	V _{Ac} (V)	V _{Dc} (V)	(J)	I _P (A)	V _C (V)	I(A)
RL1210A5R0K	4.6~8.9	2.3	3.3	0.4	5	20	250
RL1210A8R0K	6.7~10.1	4	5.6	0.4	5	22	250
RL1210A180K	16.8~21	10	14	0.4	5	42	300
RL1210A220K	19.2~24	11	16	0.4	5	48	300
RL1210A240K	21.6~27	13	18	0.8	5	54	300
RL1210A270K	24~30	14	20	0.8	5	60	300
RL1210A300K	26.4~33	16	22	0.8	5	63	300
RL1210A330K	28.8~36	17	24	0.8	5	68	300
RL1210A360K	32.4~40.5	19	27	0.8	5	77	300
RL1210A390K	33.6~42	20	28	0.8	5	80	300
RL1210A420K	36~45	21	30	0.8	5	86	300
RL1210A470K	42~52.5	25	35	0.8	5	95	300
RL1210A560K	50.4~63	30	42	0.8	5	107	300
RL1210A680K	60~75	35	50	0.8	5	128	300
RL1210A820K	72~90	42	60	1	5	149	300
RL1210A101K	90~110	53	75	1	5	176	300
RL1210A141K	121.5~148.5	71	100	1	5	238	300
RL1210A151K	135~165	95	125	1.2	5	260	200
RL1210A181K	162~198	115	150	1.2	5	300	200
RL1210A201K	180~220	120	160	1.2	5	340	200
RL1210A221K	198~242	130	170	1.2	5	360	200
RL1210A241K	216~264	150	200	1.2	5	415	200
RL1210A271K	243~297	175	225	1.2	5	475	200
RL1210A331K	297~363	210	275	1.2	5	550	100
RL1210A361K	324~396	230	300	1.2	5	595	100
RL1210A391K	351~429	250	320	1.2	5	675	100
RL1210A431K	387~473	275	350	1.2	5	710	100
RL1210A471K	423~517	300	385	1.2	5	775	50
RL1210A511K	459~561	320	410	1.2	5	850	50
RL1210A561K	504~616	350	455	1.2	5	925	50

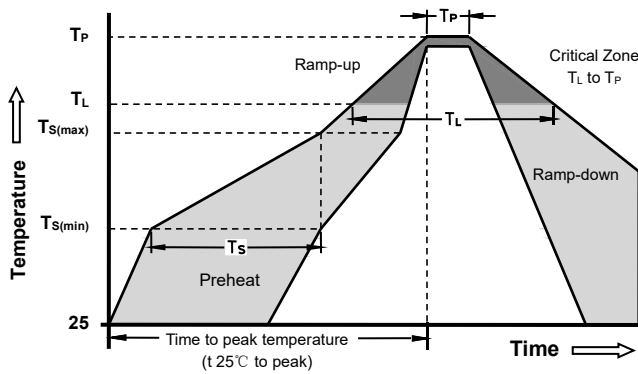
Environmental Performance

Item	Specifications	Test Condition
Bias Humidity	$V_V / V_V \leq \pm 10\%$	90%RH, 40°C, Working Voltage, 1000 hrs
Thermal Shock	$V_V / V_V \leq \pm 10\%$	-40°C to 85°C, 30min.cycle, 5 cycles
Full Load Voltage	$V_V / V_V \leq \pm 10\%$	Working Voltage, 85°C, 1000 hrs

General Technical Data

Response Time	<1ns	
Solderability	245±5 °C, 3±1sec	
Solder leach resistance	260±5 °C, 10±1sec	
Taping Package Storage Condition	Storage Temperature	5~40°C
	Relative Humidity	To 65%
	Storage Time	12 Months max

Soldering Parameters - Reflow Soldering (Surface Mount Devices)



Reflow Condition		Pb - Free assembly
Pre Heat	- Temperature Min ($T_{s(min)}$)	150°C
	- Temperature Max ($T_{s(max)}$)	200°C
	- Time (min to max) (t_s)	60 - 180 Seconds
Average ramp up rate (Liquids Temp T_L to peak		3°C/second max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/second max
Reflow	- Temperature (T_L) (Liquids)	217°C
	- Time (min to max) (t_s)	60 - 150 Seconds
Peak Temperature (T_p)		260 +0/-5°C
Time within 5°C of actual peak Temperature (t_p)		20 - 40 Seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (T_p)		8 minutes Max
Do not exceed		260°C

Precaution for soldering

Note that this product will be easily damaged by rapid heating, rapid cooling or local heating.
Do not give heat shock over 100°C in the process of soldering. We recommend to take preheating and gradual cooling

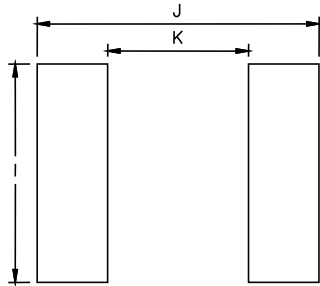
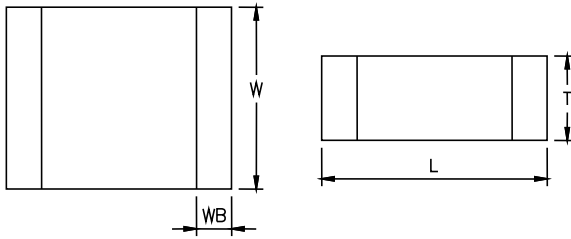
Soldering gun procedure

Note the follows, in case of using solder gun for replacement.
1) The tip temperature must be less than 280 for the period within 3 seconds by using soldering gun under 30W
2) The soldering gun tip shall not touch this product directly.

Soldering volume

Note that excess of soldering volume will easily get crack the body of this product.

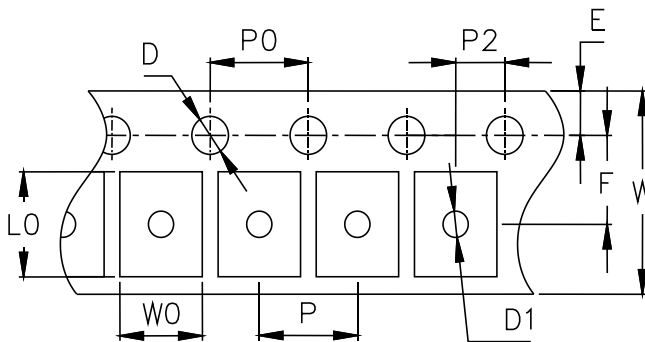
Dimensions



Recommended Soldering Pad Layout

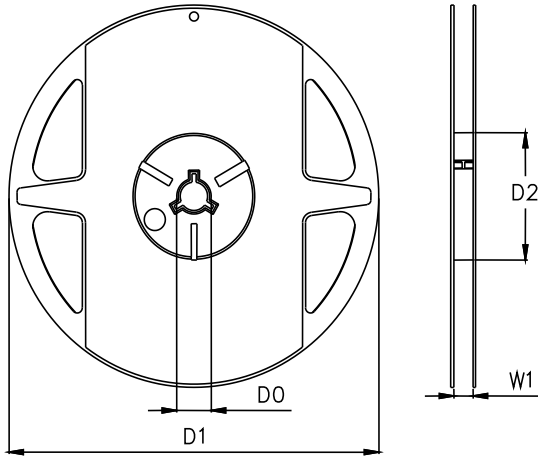
Symbol	Millimeters	Inches
L	3.20±0.30	0.126±0.012
W	2.50±0.30	0.098±0.012
T _{max.}	2.50	0.098
WB	0.50±0.20	0.02±0.008
I	3.0	0.118
J	4.0	0.157
K	2.0	0.079

Taping and Reel Specifications



Symbol	Millimeters	Inches
W	8.00±0.20	0.315±0.008
E	1.75±0.10	0.069±0.004
F	3.50±0.05	0.138±0.002
D	1.55±0.05	0.061±0.002
D1	Φ1.00±0.05	Φ0.039±0.002
P	4.00±0.10	0.157±0.004
P0	4.00±0.05	0.157±0.002
P2	2.00±0.05	0.079±0.002
L0	4.00±0.10	0.157±0.004
W0	3.25±0.10	0.128±0.004

Packing Specifications



Symbol	Millimeters	Inches
D0	13.0±0.2	0.512±0.008
D1	178±2.0	7.008±0.079
D2	Φ60.0±0.5	Φ2.362±0.02
W1	9.0±0.5	0.354±0.02

Taping Specifications

There shall be the portion having no product in both the head and the end of taping, and there shall be the cover tape in the heat of taping.

Quantity of products in the taping package

SIZE EIA (EIAJ)	RL1210A241K~561K	RL1210A Series Other
Standard Packing Quantity (PCS/reel)	2000	3000